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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF APPEALS

In re Application of

Applicants: JEAN-YVES CHENARD ET AL.

Serial No.: 254,313

Filed: April 15, 1981

For: IMPROVEMENT IN THE STABILIZATION
OF VINYL HALIDE POLYMERS

APPEAL NO. 660-84

APPEAL BRIEF

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THE INVENTION

Appellants' discovery is that the heat and light stability imparted to vinyl halide polymers (e.g. polyvinyl chloride) by mono- or diorgano- derivatives of tetravalent tin conventionally employed for such purpose is considerably improved by replacing part of the tin-containing stabilizers with a mercapto-lower-alkanol ester of C_2-C_{20} carboxylic acid such as 2-mercaptoethyl stearate. Furthermore, it has been found that the resultant cost of the stabilized polymers is considerably less since the mercaptoester is considerably cheaper than the tin-containing stabilizer, but there is no diminution in stability, but rather an increase in stability as a result of replacement of part of the tin-containing stabilizer.

The invention defined in the claims on appeal relate to the method for stabilizing vinyl halide polymers against heat and light (claims 59-65) and the stabilized vinyl halide polymer compositions (claims 66-70). Claim 59 is representative of Appellants' invention and will be referred to in this appeal brief as the "claimed method".

THE CLAIMS ON APPEAL

59. In a method for stabilizing a vinyl halide polymer against heat and light which comprises incorporating a tin-containing stabilizer therein, said stabilizer comprising a mono- or diorgano- derivative of tetravalent tin where the remaining valences of the tin atom are satisfied by bonds to halogen, oxygen, phosphorus, sulfur and a residue resulting from

- i) removal of the hydrogen atom from the oxygen atom of a carboxylic acid, an alcohol or a toluol; or

ii) removal of the hydrogen atom from the sulfur atom of a mercaptan, mercaptoacid, mercaptoalcohol, mercaptoacid ester or mercaptoalcohol ester, and where any oxygen present in said tin-containing stabilizer is bonded only to one or more of tin, carbon, phosphorus and hydrogen, the improvement which comprises replacing part of the tin-containing stabilizer with a mercaptoloweralkanol ester of a carboxylic acid containing 2 to 20 carbon atoms.

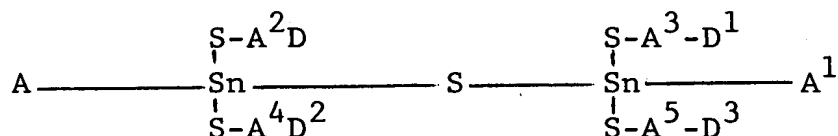
60. A method according to claim 59 in which the mercaptoloweralkanol ester comprises a mercaptoloweralkanol ester of stearic acid, oleic acid, linoleic acid, myristic acid or palmitic acid.

61. A method according to claim 59 in which the mercaptoloweralkanol ester comprises 2-mercaptoethyl stearate, 2-mercaptoethyl oleate or 2-mercaptoethyl linoleate.

62. A method according to claim 60 in which the tin-containing stabilizer comprises a mono- or diorganotin oxide, sulfide, carboxylate, mercaptide, derivative of a mercaptoacid, derivative of a mercaptoalcohol or their esters.

63. A method according to claim 60 in which the tin-containing stabilizer comprises a compound selected from
dibutyltin maleate
dibutyltin di(stearyl maleate)
[monobutyltin(isooctylmercaptoacetate)-sulfide]
monobutyltin(dodecylmercaptide)sulfide
monobutyltin trimercaptoethyl oleate
monobutyltin (hydroxyethylmercaptide)(sulfide)

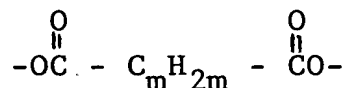
and bridged sulfur compounds of formula



where

A and A¹ are lower alkyl of 1 to 12 carbon atoms;
A², A³, A⁴ and A⁵ are lower alkylene,
D, D¹, D² and D³ each independently, is

OH, $\text{-}\overset{\text{O}}{\parallel}\text{C}\text{-}$ (C₈ - C₂₀ alkyl),
 $\text{-(C}_6\text{ - C}_{18}\text{)alkyl}$, or where
D and C¹, or D² and D³ together form the group



where m is a number from 0 to 8.

64. A method according to claim 61 in which the tin-containing stabilizer is present in an amount to provide up to about 0.25 parts of metal per 100 parts of polymer and the mercaptoloweralkanol ester is present in an amount up to about 6.5 parts per 100 parts of polymer.

65. A method for stabilizing a vinyl halide polymer against heat and light which comprises incorporating therein

- a) a tin-containing stabilizer comprising a mono- or diorganotin oxide, sulfide, carboxylate, mercaptide, derivative of a mercaptoacid, derivative of a mercaptoalcohol, or their esters, and
- b) a mercaptoloweralkanol ester of a carboxylic acid containing 2 to 20 carbon atoms,

there being present up to about 0.25 parts of tin per 100 parts of polymer and up to about 6.5 parts of mercaptoloweralkanol ester per 100 parts of polymer.

66. A vinyl halide composition which has been stabilized with respect to heat and light by incorporating therein

a) a heat stabilizer comprising a mono- or diorgano-derivative of tetravalent tin where the remaining valences of the tin atom are satisfied by bonds to halogen, oxygen, phosphorus, sulfur and a residue resulting from

- i) removal of the hydrogen atom from the oxygen atom of a carboxylic acid, an alcohol or a polyol; or
- ii) removal of the hydrogen atom from the sulfur atom of a mercaptan, mercaptoacid, mercaptoalcohol, mercaptoacid ester or mercaptoalcohol ester,

and where any oxygen present is bonded only to one or more of tin, carbon, phosphorus and hydrogen, and

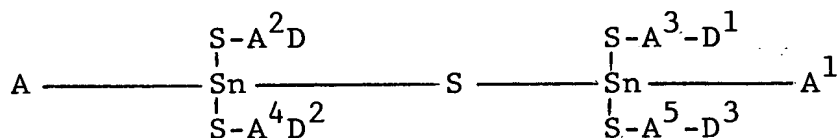
b) a mercaptoloweralkanol ester of a carboxylic acid containing 2 to 20 carbon atoms, there being present up to about 0.25 of tin per 100 parts of polymer and up to about 6.5 parts of mercaptoloweralkanol per 100 parts of polymer.

67. A composition according to claim 66 in which the mercaptoloweralkanol ester comprises a mercaptoloweralkanol ester of stearic acid, oleic acid, linoleic acid, myristic acid or palmitic acid.

68. A composition according to claim 66 in which the mercaptoloweralkanol ester comprises 2-mercaptoethyl stearate, 2-mercaptoethyl oleate or 2-mercaptoethyl-linoleate.

69. A composition according to claim 68 in which the tin-containing stabilizer comprises a mono- or diorganotin oxide, sulfide, carboxylate, mercaptide, derivative of a mercaptoacid, derivative of a mercaptoalcohol or their esters.

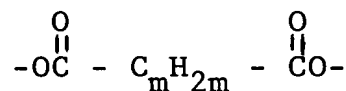
70. A composition according to claim 68 in which the tin-containing stabilizer comprises a compound selected from
dibutyltin maleate
dibutyltin di(stearyl maleate)
[monobutyltin(isooctylmercaptoacetate)-sulfide]
monobutyltin(dodecylmercaptide)sulfide
monobutyltin trimercaptoethyloleate
monobutyltin (hydroxyethylmercaptide)(sulfide)
and bridged sulfur compounds of formula



where

A and A¹ are lower alkyl of 1 to 12 carbon atoms;
A², A³, A⁴ and A⁵ are lower alkylene,
D, D¹, D² and D³ each independently, is

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OH, -OC - (C₈ - C₂₀ alkyl),
(C₆ - C₁₈)alkyl, or where
D and C¹, or D² and D³ together form the group



where m is a number from 0 to 8.

HISTORY OF PROSECUTION

As a courtesy to the Honorable Board, set forth below is an abbreviated summary of the history of the prosecution of this application:

<u>Paper No.</u>	<u>Item</u>
2	Clarificatory amendment of claim 48.
3	Office Action of January 20, 1982. Note that none of the references relied upon by the Examiner in this office action were ultimately relied upon in the final rejection from which this appeal is taken.
4	Summary of telephonic interview with Examiner dated March 1, 1982 in which the attorney agreed to amend the claims to avoid the references relied upon by the Examiner in the office action dated January 20, 1982.
5	Express abandonment of SN 070,503 (the parent of the instant application).
6	Amendment in response to office action of January 20, 1982.
7	Office action of June 16, 1982 finally rejecting claims 1, 5-15, 18-22, 25-35, 38-41, 44-54 and 56-58.
8	Amendment after final rejection and accompanying Rule 132 Affidavit.
9	Office action of September 29, 1982 indicating that claims 60-71 (subsequently renumbered to read claims 59-70, the claims now on appeal) were allowed, but further action in respect to this case was being

suspended pending the possibility of declaration of an interference.

- 10 Office action dated April 11, 1983 rejecting claims 60-71 (now renumbered to read 59-70) in view of U.S. patent 4,360,619, one of the references discussed below) and requiring Appellants to copy all possible claims that Appellants could make from said U.S. patent 4,360,619.
- 11 Request for extension of time.
- 12 Second request for extension of time.
- 13 Amendment in response to the office action of April 11, 1983. Appellants indicated in this amendment that the Examiner's rejection under 35 USC 102 under U.S. 4,360,619 is inappropriate and it was pointed out why Appellants felt they could not make the claims of the cited patent.
- 14 Letter bringing to the Examiner's attention Japanese Patents 56-2336 and 55-160044. These patents were subsequently relied upon by the Examiner as one of the bases for finally rejecting the claims from this appeal is taken and are discussed below.
- 15 Office action of September 28, 1983 in which the Examiner rejected the claims now on appeal under 35 USC 112, repeated the earlier rejection under 35 USC 102 in view of U.S. 4,360,619 and entered a new rejection under 35 USC 102 in view of Japanese Patents 56-2336 and 55-160044.
- 16 Power of attorney.
- 17 Amendment in response to the office action of September 28, 1983.
- 18 Affidavit under Rule 131 accompanying amendment in response to office action of September 28, 1983.
- 19 Office action dated June 14, 1984 finally rejecting claims 59-62 and 64-69 and objecting to claims 63 and 70. The Examiner was of the view that the Rule 131 Affidavit failed

to overcome the rejection made under the Japanese patents.

- 20 Office action of June 14, 1984 requiring Appellants to copy the claims set forth therein deemed to be allowable for the purposes of an interference with U.S. 4,360,619.
- 21 Petition to the Commissioner under Rule 181 in respect to the propriety of the Examiner's requirement in the office action of June 14, 1984 (Paper No. 20) the Appellants copy the claims suggested by the Examiner for the purposes of interference with U.S. 4,360,619.
- 22 Response to the office action of June 14, 1984 (Paper No. 19) finally rejecting the claims now on appeal.
- 23-27 Declarations under Rule 131 submitted to overcome the rejection under Japanese patents 56-2336 and 55-160044.
- 28 Decision on petition dated September 21, 1984 denying the petition submitted July 6, 1984.
- 29 Office action dated October 18, 1984 reaffirming the final rejection of June 14, 1984.
- 30 Notice of appeal from the final rejection of claims 59-70.

THE CITED REFERENCES

1. U.S. Patent 4,360,619 to Kugele et al.

This patent is directed to the stabilization of vinyl halide polymers such as polyvinyl chloride with a composition consisting of 40-70% of an organotin compound, 10-60% of a mercaptan (which includes alkyl mercaptans, aryl mercaptans, mercaptocarboxylic acids, mercaptocarboxylic acid esters, mercaptoalcohols, mercaptothiols, mercaptoalcohol esters of carboxylic acids, etc.); and 0-33% of a halogen-containing tin compound with the proviso that when

the weight percent of the halogen-containing tin compound is 0 then at least one of the organotin compounds is selected from organotin compounds having certain specified formulas, each containing halogen bonded to the tetravalent tin atom.

2. Japanese Patent 55-16044 contains a disclosure of the stabilization of halogen-containing resin compositions, such as polyvinyl chloride, by the use of an organotin mercaptocarboxylate, an organotin mercaptocarboxylate halide, or an organotin mercaptocarboxylic sulfide, in combination with a mercaptoalkyl carboxylate.

3. Japanese Patent 56-2336 discloses that halogen-containing resin compositions such as polyvinyl chloride can be stabilized by using an organic tin-sulfur-containing compound possessing a carbon-tin-sulfur group, together with a carboxylic acid mercaptoalcohol ester or mercapto-carboxylic acid alcohol ester, plus a mononuclear dihydric phenol.

THE REJECTIONS

Claims 59-62 and 64-69 stand rejected under 35 USC 102(a) on the basis of Japanese patent 56-2336 and 53-160044.

Claims 59-62 and 64-69 also stand rejected as unpatentable under 35 USC 102(a) over U.S. patent 4,360,619.

Claims 63 and 70 stand objected to inasmuch as they are allowable except for their dependency upon rejected claims.

THE ISSUES

For the sake of brevity, Appellants will concede that, from a factual point of view, the cited references are

clearly pertinent. That is, the cited references would support the final rejections of the claims on appeal, provided that the references are otherwise effective references and/or have not been overcome pursuant to the provisions of Rule 131. The issues are thus legal in nature and may be simply stated as follows:

- A. Have claims 59-62 and 64-69 been properly rejected as unpatentable under 35 USC 102(a) over U.S. Patent 4,360,619 on the basis that Applicants have failed to copy the claims therefrom for the purposes of interference? In this connection it is to be noted that the filing date of the U.S. patent is several years later than the effective filing date of this case.
- B. Does Applicants' parent application Serial No. 70,503 sufficiently antedate and/or do the Affidavits submitted on behalf of Appellants under Rule 131 provide a sufficient showing so as to remove Japanese Patents 56-2336 and 53-160044 as a basis for rejection of claims 59-62 and 64-69 under 35 USC 102(a)? It should be noted that, for the record, Appellants have previously perfected their claim for priority under 35 USC 119, having submitted a certified copy of French patent application No. 78,24863, filed August 29, 1978.

THE ARGUMENTS

In respect to the cited U.S. patent 4,360,619, it is significant to note that Appellants' French patent application for which priority has been obtained was cited during the prosecution of the '619 patent, indicating that the

Examiner considered Kugele et al. to be patentably distinct from Appellants' invention. Further, the Examiner considered the claims of Kugele et al. to be patentably distinct from the combination of Appellants' French priority application when considered in conjunction with other prior arts cited in the '619 patent. If Appellants are mistaken in this regard, and the '619 patent is not patentable in light of Appellants' French priority application, alone or combination with other prior art such U.S. 3,715,333 (which teaches that the combination of known tin stabilizers and an organotin halide provides improved stabilization), then Appellants respectfully submit that re-examination of the '619 patent under Rule 520 is the appropriate route, rather than an interference proceeding.

It is also respectfully submitted that the specification and claims of the '619 patent are sufficiently different from the invention described and claimed by Appellants such that an interference in fact is not possible, i.e. Appellants have no "right to make" the claims of the '619 patent and therefore were correct in not copying such claims.

Each and every claim of the '619 patent contains the limitation that there be present from 0-33% of a halogen-containing tin compound, as defined, with the proviso that when the weight percent of the halogen-containing tin compound is 0 then at least one of the organotin compounds is selected from organotin compounds having certain specified formulas, each containing halogen bonded to the tetravalent tin atom. Thus, the '619 patent mandates the presence of a halogen-containing tin compound where halogen is bonded to tetravalent tin.

In contradistinction, Appellants do not provide for the required presence of a halogen-containing tin compound wherein halogen is bonded to tetravalent tin. This

limitation of the '619 patent was considered material and was strenuously argued by Kugele et al. during the prosecution of their patent as the basis for patentability. The Examiner, however, has suggested that a claim calling for an organotin compound, a mercaptoester and optionally, a tin halide, would be appropriate for interference purposes. It is clear that such a simple formulation is nowhere to be found in the '619 patent as the basis for copying by Appellants.

Appellants respectfully submit that the fundamental element of their claimed invention is that their mercaptoester is the ester obtained by reacting a mercapto-lower-alkanol with a carboxylic acid. Appellants have consistently urged that the various species of mercaptans such as alkyl mercaptans, mercaptocarboxylic acids and mercaptocarboxylic acid esters are not equivalent in performance to the ester of a mercapto-lower-alkanol as described and claimed in the claims on appeal. Thus, since the '619 patent discloses and claims an invention that is different from that claimed by Appellants, the Examiner's rejection under 35 USC 102(a) is not well-founded. Under such circumstances, it is clear that the Examiner's requirement that Appellants copy claims is unwarranted and therefore Appellants' refusal to copy such claims i.e., on the basis of "no right to make", is excused and cannot serve as the basis for a rejection under 35 USC 102(a). Again, Appellants wish to direct the Honorable Board's attention to the fact that Kugele et al. was considered to be patentably distinct from Appellants' French priority patent application, but yet is now considered to be overlapping with the claims on appeal from an interference point of view. This anomaly clearly points out the inadequacy of the basis for the Examiner's rejection under 35 USC 102(a) over the '619 patent.

The office action of September 28, 1983 (Paper No. 15) contained a rejection of the claims on appeal under 35 USC 102(b) as being fully met by the '619 patent, and it would appear that the Examiner withdrew the requirement that Appellants copy claims from '619 patent for purposes of interference. In response to the office action of September 28, 1983, an amendment was mailed on December 21, 1983 and included an Affidavit submitted under Rule 131 demonstrating the reduction to practice in the United States prior to December 12, 1980 of a halogen-containing composition falling within the scope of the claims now on appeal. The '619 patent has an effective date of February 26, 1981 and accordingly, the reduction to practice in the United States prior to December 12, 1980 of an invention defined by the claims, i.e. the use as a stabilizer for a vinyl halide resin of a halogen-containing organotin compound and a mercapto-lower-alkanol ester of a carboxylic acid, is clearly effective to antedate the '619 patent and remove it as a basis for rejection of the claims.

There is no question that Appellants were in possession of the aspect of the invention, prior to December 12, 1980, as it relates to the combination of a halogen-containing organotin stabilizer with a mercapto-lower-alkanol ester of a carboxylic acid. This is clearly shown by the three patents to Wowk and the patent to Larkin, submitted as enclosures to the amendment mailed December 21, 1983. These four patents clearly illustrate the level of the knowledge and the skill of the researchers in the prior art respecting the use of halogenated organotin stabilizers. Reasonably skilled chemists, knowing that halogenated organotin compounds are useful in conjunction with mercaptoesters, would promptly recognize that the halogenated organotin stabilizers described in the prior art would find utility in the

context of the claimed invention for stabilization of vinyl halide resins.

In the Office Action dated June 14, 1984 (Paper No. 20), the Examiner again shifted grounds and stated that "the following claims found allowable are suggested for the purposes of interference with U.S. Patent No. 4,360,619" (emphasis supplied). However, in a different Office Action dated June 14, 1984 (Paper No. 19) the Examiner finally rejected the claims on appeal on the basis of the two Japanese patents since the Examiner felt that the Rule 131 Affidavit R. A. failed to overcome the rejection under 35 USC 102(a) on the basis of the Japanese patents. Appellants do not understand how a group of claims could, on the one hand be found allowable for the purposes of interference, but on the other hand be found to be anticipated by other prior art of record. The Examiner went on to require Appellants to copy the claims set forth in Paper No. 20 on the basis that failure to do so would have been considered a disclaimer of the involved subject matter under the provisions of Rule 203.

Thereafter, Appellants petitioned the Commissioner under Rule 181 in respect to the Examiner's requirement that Appellants copy claims from the '619 patent. For the sake of brevity, Appellants will not repeat the essence of their petition which was filed on July 6, 1984, but will rely on the arguments presented therein to support their premise that no interference in fact could exist. In the decision on the petition dated September 21, 1984 (Paper No. 28), it was held that Appellants' argument on petition with regard to support and breadth of the count was not found to be reason to not comply with the requirement of the Examiner and required no supervisory intervention. However this still does not dispose of Appellants' premise that an interference, in fact, could not exist on the basis that

Appellants had no right to make the suggested counts and therefore their failure to copy the claims for the purposes of instituting an interference was clearly excusable.

In respect to the rejection on the basis of the Japanese patents Appellants submitted several Rule 131 Affidavits as well as Rule 132 Affidavits. In respect to the Rule 131 Affidavit of Michel Foure, the Examiner concluded that the Affidavit failed to overcome the rejection on the basis of the Japanese patents since the showings contained therein did not allegedly serve any probative purpose because they allegedly failed to establish an earlier reduction to practice of an organotin mercapto-carboxylic halide species with a thiol ester. In effect, the Examiner's position was that Appellants would have had to make the exact invention of the Japanese patents before the references were published. Appellants respectfully submit that the law allow them to antedate the Japanese references by showing reductions to practice of species within their generic claim prior to the effective date of the Japanese patent, notwithstanding that such species differ from the species recited in the Japanese patents.

There is no question but that Appellants were in possession of the claimed generic invention prior to the effective date of the Japanese patents. Under the decisional law pertaining to Rule 131 Affidavits, it is clear that Appellants need only show reduction to practice of a species of the claimed generic invention where the reference shows only a species and the Appellants' species can be different from the species of the reference.

The Honorable Board's attention is respectfully drawn to the discussion appearing in the Response After Final Rejection mailed August 9, 1984. That amendment clearly delineates Appellants' position in regard to why the Appellants' priority French application, parent application and

various Rule 131/132 Affidavits serve to overcome the basis for the rejection of the claims over the Japanese patents. For the sake of brevity, such arguments again will not be repeated. Suffice it to say, the Rule 131 Affidavits previously submitted indicated that Appellants' conception embrace the field of useful organotin stabilizers and that it was never their idea to exclude the organotin halides from the scope of their conception.

In the Examiner's response dated October 16, 1984 (Paper No. 29), the Examiner dwells at length as to why Appellants' French priority applications and/or the parent application contain insufficient disclosure to support Appellants' contention that they were in possession of a generic concept prior to the effective dates of the Japanese patents. Appellants strenuously contend that the Examiner is incorrect in this regard and those skilled in the art will immediately recognize that Appellants have, in fact, provided an enabling disclosure in the French priority application and their parent application sufficient to show that they were in possession of a generic concept. However, assuming arguendo, that the priority and parent applications were insufficient to support such concept, Appellants' Rule 131/132 Affidavits clearly demonstrate reductions to practice prior to the effective date of the Japanese references of species within, although different from those of the Japanese references, nevertheless within the scope of a generic concept, in the sense that those skilled in the art recognize that the differing species belong to a generic concept.

In view of the discussion set forth above, and the arguments, Appellants' French priority application, the parent U.S. application and various Rule 131/132 Affidavits previously of record, it is clear that the Examiner's rejection of the claims now on appeal is not well-founded.

Accordingly, it is respectfully requested that the Honorable Board reverse the rejections and direct the Examiner to pass this application to issue.

Respectfully submitted,

June 5, 1985
Date

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